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ABSTRACT

A study was conducted in which half-hour segments of prime-time network dramatic programing were tabulated for such violence-related items as: the seriousness and significance of violence, the number of violent actions in the program, and the duration of violence. Other factors considered were: audience size, share of audience, program duration, program type, program tone, format, and time of broadcast. This consideration of how one dimension of program content (violence) affects audience size indicated that violence measures accounted for little more than 5% of the variance in audience shares, an additional 4% during nonfamily hour programs, and 55% when the focus was only on feature films. (TJ)

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# CULTURAL POLLUTION AND THE PRODUCTIVITY OF VIOLENCE

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Presented to the Theory and Methodology Division, Association for Education in Journalism Convention, Houston, Texas, August 1979

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## Audience Production Functions

> "The game of television is basically between the network and the advertiser, and the Nielsen digits determine what the latter will pay for the circulation of his commercial. The public is involved only as the definition of the number: so many persons 18-49, so many others, all neatly processed by television." (3, p.14)

All industrial production involves the combination of inputs in such a way so as to maximize the output of product at the requisite level of quality. This technology can be described by a technical production function which specifies the maximum level of output which can be obtained with a given combination of inputs. When estimated by multiple regression techniques (4), this production function will also describe the marginal product, or independent contribution of each input factor. If as Les Brown suggests, television broadcasting is an industry which produces audiences for sale to advertisers, it should be possible to describe that process in economic terms that would allow the community to evaluate the costs and benefits which might derive from any changes in that technology which might be occasioned by its regulatory activity.

For many, television viewing is a non-selective, almost passive activity. Paul Klein has suggested that television audiences select the "least Objectional Program" and concludes that "because a viewer in a chair tends to stay in his chair, an LOP renders great service to the program

following it. It can become, in the trade's argot, a strong lead-in (14, p. 21)." In our preliminary analysis, Lead-In accounted for nearly 50 percent of the variance of audience shares. Once we acknowledge the habitual nature of "television watching," we must conclude that the decision to change the channel and to watch Channel A, rather than B, or C, must be based on some expectation that there is some difference in the content of each, and that A is "preferred" or "less objectionable" than the others.

Efforts to estimate the productivity of television programs have been limited primarily by their reliance on imprecise, and somewhat arbitrary definitions of program content. The bulk of this research has been concerned with estimating the value of, or the demand for, rather broadly defined program "types" such as news, action-adventure, theatrical films or comedy (18, 19). However, Edward Greenberg and Harold Barnett demonstrated that such types were inadequate predictors of audience shares for a sample of feature films scheduled by the networks. They concluded that because there was so much apparent variety in films, "choice within types may be as valuable to many viewers as diversity across types." (12, p.93)

More recently, progress has been made in the determination of consumer preferences through efforts to describe them in terms of product attributes. Following the approach of Kelvin Lancaster, who argued that a product is not valued for itself, rather for the combined value of its identifiable qualities, several researchers have gathered empirical support for the utility of multi-attribute preference models (13).

Reeves and Greenberg, selecting eight attributes for television characters, including funny, active and strong, concluded that only four attributes were necessary to account for the variance in children's preference for television

characters (20). Donald Lehman used program attributes, such as action, suspense, humor, and other qualities such as being well-produced, to predict viewer liking and actual viewing of 20 prime time programs (16).

Violence as an Attribute

Violence, or "action" as it is euphemistically called, is used regularly as an "attention-grabber", or simply as a way to move a plot along and its value as an audience builder has long been treated as a cultural fact (1, 2, 3, 21, 23, 26, 27). However, there has been very little work which has sought to test the assumptions empirically. Two recent studies (8, 9) have examined the productivity of violence in prime time television programs.

Ed Diener and Darlene DeFour counted the frequency with which 78 specific events occurred in a sample of 62 episodes of 11 different series. These were summed for each program to produce "aggression, humor, drama and action" scores for each program. Multiple regression was used to predict the audience, as measured by the A.C. Nielsen "average audience" estimate for that series on the immediately following week. Not surprisingly, given the selection of a lagged popularity index, the equation was not significant. The correlation of their aggression score with the Nielsen audience estimate was also small and insignificant, leading to their conclusion that "program popularity might be a function of qualitative factors that were not captured in the simple discrete-event-type categories used in this study (8, p.336)."

Using estimates of several attributes of programs sampled over a seven year period, Gandy estimated three production functions for the television industry. Two were significant at the 1% level, and explained as much as 14% of the variance in audience, as measured by A.C. Nielsen, and expressed

as a percentage of the audience watching television at that particular time. The amount of violence, a simple count of the number of acts of violence occuring in the program, emerged as a significant, independent, and positive influence on each program's share of the audience.

Treating the audience production process as a competitive process, wherein the audience for program A is seen to be a function, not only of the attributes of that program, but a function of the attributes of other programs shown at the same time, Gandy estimated several production functions for each network. The CBS equations were all significant, explaining more than 70% of the variance in audiences for 54 half hour segments. Again, the amount of violence in CBS programs emerged as a significant, positive factor in the production of audiences. However, the most important factor, as measured by the standardized beta coefficient (-.747) was a variable describing the significance of the violence. The negative coefficient was interpreted to mean that "the less significant the violence was to the plot or to the climax of the program, the more it contributed to audience size (9, p.11)."

Several factors call for caution in the interpretation of the Gandy data. First, because only 18% of the half hour periods which were broadcast during the seven sample weeks were included in the network level analysis, the small sample may have been biased in some unknown direction. Second, and perhaps more importantly, the samples were spread out over a period of seven years, and it was during this period that ABC succeeded in wresting the production crown away from CBS. Thus, it is highly unlikely that any single technology was in use by anyone other than CBS.

THE PRESENT STUDY: METHODOLOGY

The sample consisted of 586 half-hour segments of prime-time network dramatic programming aired between 8:00 and 11:00 P.M. each evening. The selection of the half-hour as the unit of analysis was based on the following realities of the audience production process: 1) television programs are not of uniform length, ranging from 30 to 180 minutes; 2) audiences are produced in a competitive environment, in that the potential viewer makes a choice between simultaneous television offerings, many of which are likely to change on the half hour. The half hour is the largest, and most logical unit of analysis when comparisons are being made.

Program content data used in this analysis were generated from 380 prime-time network dramatic programs broadcast during a seven-week period in the fall of 1976. Included were all dramatic programs broadcast between the hours of 8 and 11 P.M. each day; all variety, news, and sports programming were excluded.*

The data consist of measures of program content and audience size. Content items measuring violence used the following definition. Violence is "the overt expression of physical force, with or without a weapon, against self or other, compelling action against one's will on pain of being hurt

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*The data were intially collected as part of a sampling experiment of The Cultural Indicators Project. C.I. methodology is described in George Gerbner, Larry Gross, Marilyn Jackon-Beeck, Suzanne Jeffries-Fox, and Nancy Signorielli, "Cultural Indicators: Violence Profile No. 9," Journal of Communication, 1978, 28:3, pp. 176-207.

or killed, or actually hurting or killing."*

Program content measures included the following violence-related items: the seriousness and significance of violence, the number of violent actions** in the program, and the duration of violence(the amount of time, in seconds, these actions took up). Other attributes were program duration, network, program type (crime or action-adventure), program tone (comic or serious), format (television play or film), and the time of broadcast (early or late evening). Data on characterizations were also used in the analysis. These items included the total number of major characters, the number of major characters who committed violence (hurt or killed other characters) and the number of major characters who were victimized (were

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* Violence "must be plausible and credible. It must be directed against human or human-like beings, and it must hurt or kill, or threaten to do so, as part of the script's plot. No idle threats, verbal abuse, or gestures without credible violent consequences are included. However, once an unmistakably violent incident is observed, it is recorded whether the script calls for murder, "natural" catastrophies, or "accidents." (Although accidents are very rare in fiction, they are neither "natural" or "accidental." "Accidents" written into scripts victimize characters who fall prey to them, and the message of victimization is one significant aspect of exposure to violence.) Violence in a realistic or "serious" context is recorded along with violence in a fantasy or "humorous" context...Clear-cut violence in any context is coded because the social lessons of such violence can by demonstrated--and learned--in any context. There is evidence to suggest, for example, that exposure to fantasy or "humorous" violence is effective in conveying some lessons of violence. (See, for example, A. Bandura, D. Ross, and S. Ross, "Imitation of Film-mediated Aggressive Models," Journal of Abnormal and Social Psychology, 66, 1963, 3-11; and G.T. Ellis and F. Sekura III, "The Effect of Aggressive Cartoons on the Behavior of First Grade Children," Journal of Psychology, 81, 1972, 7-43.) Therefore, its exclusion, or that of "accidents" and "catastrophies," would be analytically unacceptable." (George Gerbner, et al., "Cultural Indicators: Violence Profile No. 9, op. cit., p. 179.)

** A violent action is a scene of some violence confined to the same participants. If a scene is interrupted by flashbacks or shifts to another scene, but continues in "real time," it is still the same episode. Any change in the cast of characters--such as a new agent of violence entering the scene--starts another violent action (ibid, p. 179).

hurt or killed). Finally measures indicating the total number of characters, as well as the number who were injured and/or killed in each program's violent actions were also generated.

Interval scale content items (e.g., the number of violent actions, number injured, or number of killers) were transformed into scores reflecting their rate per minute of programming. That is, the count (such as the number of actions) for the entire program was divided by the length, in minutes, of the program. When transformed, this score becomes the average number of violent actions per minute of programming. These scores were computed for each half-hour program segment. Nominal scale content items were not so standardized; that is, the original code was used for each program segment.

Estimates of the national audience for these programs and program segments were based on measures generated and published by the A.C. Nielsen Company.* Four measures were calculated and used in this analysis--First Quarter and Half Hour Ratings, and Shares.

Nielsen estimates of the average audience for each half-hour of programming are called the First Quarter and Half Hour Rating in this analysis. The third audience measure, Share, expresses the average audience for each half-hour segment as a percent of households actually watching television (HUT). Since the number of households watching television changes throughout the evening (rising quickly to a maximum around 9 P.M. and then slowly declining), Share is a very important measure because it has a common base (percent). Therefore it may be compared throughout the evening, whereas the average audience estimates may not.

* The Nielsen National TV Audience Estimates: Nielsen Television Index, A.C. Nielsen Co., 1976.

ANALYSIS

The technology of audience production may be described from several different perspectives. We may consider the network television industry as a whole, and assume that all three networks use the same technology and are equally efficient in its use. The technology of the industry could be described by a single production function. We may also consider the networks to be individual competitive firms, that either choose to use different technologies, or are more or less efficient in the use of a standard technology. Furthermore, we may recognize that the pool from which potential audiences are created is finite, and audiences captured by one network are unavailable to the others. Under such competitive, zero-sum conditions, the technology of one network may be constrained by the technology in use by its competitors.

Alternately, we may consider that there are production functions, or "formulas" that differ for each program type, such that programs of a particular type share common attributes, but more successful types combine these attributes in optimal proportions. Each of these alternatives are considered in the analysis that follows.

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Table One
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Table One presents the group means on key measures for program segments classified according to network, format and time of broadcast. Since the first hour of prime time programming is generally aimed at capturing the broader "family" audience, including young children, a subset of the sample, composed of programs beginning 9 P.M. or later, was selected for detailed analyses (N=390 half hours). Half hour ratings and shares reveal that ABC programs were more successful than those of the other networks. ABC also seems to be more

willing to sprinkle their programs with a greater number of corpses than the other networks (Number Dead). Feature films produced larger audiences than teleplays in general, and like ABC, had a greater number of mortally wounded characters per minute of programming.

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Table Two
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Efforts to describe the audience production function for the television industry during all prime time hours were only partially successful. Though each equation was significant, little more than five percent of the variance in audience shares was explained by the 12 program attributes. The most important positive contribution to audience shares was the estimate of the average number of victims (BETA=.239). While the number of major characters who were the targets of fatal violence appears to reduce the average audience share, the overall number of dead was a significant positive factor.

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Table Three
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In Table Three, the analysis was limited to the program segments in the non-family viewing hours, and the same 12 variables explained 9 percent of the variance in audience shares. Again, the number of mortally wounded characters was a significant positive factor in audience production, while the number of mortally wounded major characters was a significant negative factor. Overall, the average number of victims per minute made the most substantial positive contribution to audience shares (BETA=.339).

Further subdividing the non-family hour segments into network offerings

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Table Four
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produces dramatic increases in the power of the estimating equations. The 12 variable equation explains more than 30 percent of the variance in the average

half hour audience for CBS. All the equations are significant ($P<.01$), and there are important differences in the signs of the coefficients for each network's program attributes. We see, for example that the number of mortally wounded characters is a significant negative factor in CBS audience production, and a significant positive factor in audience production for NBC. The number of major characters who are killed are significant negative factors in audience production for both CBS and NBC, but a positive factor in the technology of ABC. In fact, the number of mortally wounded major characters makes the greatest positive contribution to audience for ABC (BETA=.621).

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Table Five
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Not unexpectedly, feature films tend to have more common attributes than teleplays or dramatic serials. With 110 half hours of feature films, we are able to explain some 55 percent of the variance in audience shares (Table Five). It is within the feature film group that the number of major characters killed is a significant negative factor, while the number of all characters killed is a significant positive influence on productivity.

Examining only crime dramas shown in non-family hours, we find that mortal violence detracted from audience production, as coefficients for both variables are negative. In the crime dramas, as in the Teleplays overall, the most important positive contribution to audience shares is the estimate of the average number of victims per minute. This factor is positive in all production functions estimated under non-competitive conditions.

In order to examine audience production under competitive conditions, where the content of competing programs is known and included in the production function, it is necessary to treat each half hour period, as a unit of analysis containing three competing network offerings. Thus the sample cannot include

those program segments broadcast in half hour periods when one or more networks offered a news, sports or variety program. The sample contained 106 half hour periods that met the requirement of simultaneously having dramatic programs on all three networks.

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Table Six
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Under competitive conditions, we are able to estimate the extent to which the success of one firm is dependent upon the simultaneous offerings of a competing firm. We see for example that for ABC we are able to explain 31 percent of the variance in audience shares with 9 variables, but it is the program attributes of its competitors which make the most important contributions. That is, the seriousness of the violence in ABC programs is the only attribute of ABC's offerings which makes a significant contribution to its audience in this model (BETA=.258), while the significance of the violence in CBS programs scheduled at the same time is even more important (BETA=.483).

Competitive factors appear to be the most important for all the networks, as there are no significant factors which make positive contributions to audience production for CBS or NBC beyond those which describe attributes of competing programs.

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Table Seven
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Difference scores represent an alternative formulation of the competitive production situation. The average amount of violence (the average number of violent actions per minute of programming) on all three networks was calculated for each half hour period. Each network's offering was then described in terms of its difference from that average. Thus, for any half hour period, each

network can be seen to offer more or less than the average amount of violence. This variable and five others were used to estimate production functions for the three networks under fully competitive conditions.

Since two difference scores contain all the variance in this measure, only two of three coefficients appear in each equation. For ABC, it was more important that the NBC offering was more violent than the average, while NBC apparently prospered when ABC programs exceeded the half hour average. Though we are most successful in explaining the variance in the CBS audience (r-squared=.327), these difference scores were not significant. Instead, it was the number of characters who were injured in CBS programs that made the most important contribution to CBS's success under competitive conditions (BETA=.472). This injury variable was not significant for CBS under less specifically competitive conditions (Table Four), though its sign was still positive.

For NBC, the most important contribution to audience size under these conditions was the number of major characters who committed violence (BETA=.586). The only variable which was significant for each network as an attribute of its own program offering was the average number of characters killed per minute. For ABC this variable was significant and positive, while it was significant and negative for NBC and CBS.

## DISCUSSION

This attempt to describe the audience production process has been limited to a single dimension of program content. We find that by treating the industry as a whole our violence measures account for little more than 5 percent of the variance in audience shares. This probably is due to the variety in audience composition throughout the evening. Thus, when we examine non-family hour programs, presumably a period with fewer children

in the audience, we explain an additional 4 percent of variance in audience shares. When we examine the networks independently, we find a dramatic increase in the amount of variance explained by these violence-related attributes. The greatest gain in explanatory power, comes when we focus on a single program format, the feature film. Here we explain 55 percent of the variance in audience shares.

It is clear that there is more to the success or failure of a feature film than the amount of violence, its seriousness, and the distribution of violents and victims. However, the fact that more than half of the variance in the audience size is associated with differences in these attributes suggests that violence is an unquestionably important productive input. The differences in the signs of the coefficients for violence involving major characters, as compared with all characters who participate in violent actions warns against overly simplistic formulations of the importance of program violence.

Our analysis of individual network production functions, while more successful than formulations for the entire industry, does not lead to easy generalizations. Again, as between program types, we find differences in the magnitude and sign of the coefficients for these attributes in programs offered by each network. Thus, it may be that audience production takes place within an industry composed of three monopolists that differ in their selection and presentation of a limited number of program types, which are further differentiated by their efficient combinations of program attributes.

Our attempt to estimate the production function for networks under fully competitive conditions (those which most accurately represent the conditions under which audiences are produced for sale to advertisers) are hampered by the relatively small sample (N=106). More importantly perhaps, our analysis

is limited by the nature of the aggregated audience estimates. It is not the case that broadcasters are interested in producing numbers without regard to their characteristics. Advertisers are interested in more detailed demographic information about the age and sex of the audience.

Differences in the coefficients of violence attributes for the networks suggest that either by agreement, or by independent design, networks may prefer to produce more homogeneous audiences than they did in the past. Eric Barnouw argues that "sponsorship became a matching game" when advertisers were able to match the demographic information provided by the A.C. Nielsen Company with demographic information about their retail customers. CBS was reported to have sent prospective sponsors a publication called Where the Girls Are which aided the matching of products with programs with female viewers of varying ages (1, p.71). In order to test the proposition that networks are specializing in the kinds of audiences they are producing at any one time, we would need to disaggregate the average audience estimates into the same age/sex cohorts currently purchased by television advertisers.

We have little doubt that estimations of production functions, where the output is measured in a particular age/sex cohort, rather than the heterogeneous average audience, would find our program attributes explaining substantially more of the variance. Indeed, it is expected that we will find a high degree of specialization and somewhat more "friendly competition" between the networks for the attention of one target group or another.

## Regulatory Considerations

Efforts by government agencies and citizen groups to increase public welfare through the imposition of restrictions on the content of the mass media can be seen to be analogous to similar efforts to reduce industrial air pollution through the imposition of restrictions on the use of particular

fuels. In each case, the community has identified an externality, or harmful output, which is the unintended joint product of some production process, otherwise valued by some members of that community (22).

We may see, for example, that a community may place some value on being able to purchase and serve fresh bread each morning because it is produced by their local bakery. However, the bakery may use coal or wood to heat its ovens, and in the process spew great clouds of smoke into the air each morning. The smoke is an externality, and local ordinances may restrict the hours of operation to a pre-dawn period, or may require the burning of low sulphur fuels. Or, we may consider that although a commuter train is highly valued by its customers, its noise and smoke also disturb the residents of houses and apartments along the way. Again, local ordinances may restrict the hours and the speed with which the train may pass through the community. In each case, community action has been directed toward modifying the process through which the valued goods or services are produced (7).

In the same way, we suggest that while television programs may be highly valued by the audience, and that audience in turn, is highly valued by the advertiser, there are several identifiable externalities which accompany or flow from television viewing (1, 5, 6, 10, 11, 15, 17, 23) and require some form of regulation in the interest of the community. That regulation will ultimately involve the modification of the process through which value is produced for audience and advertiser.

The FCC has taken economic injury into consideration in a variety of broadcast/common carrier cases since the Carroll Decision in 1958.* Economic

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* Carroll Broadcasting Company v. Federal Communications Commission. 258 F.2d 440 (D.C. Cir.) July 10, 1958. The Carroll case is seen as rejecting the previously applied narrow standards with regard to economic injury, and was usefully applied as protection for broadcasters from non-broadcast competitors. Cited in Documents of American Broadcasting edited by Frank Kahn, Englewood Cliffs: Prentice Hall, 1978.

injury has been linked, at least theoretically, to the public interest in those cases where increased competition would have resulted in a lessening of a licensee's ability to provide service in the form of unsponsored public affairs programs. CATV policy, beginning with the restrictive Southwestern Decision* had been based on purely speculative claims of substantial injury. More recently, the FCC has solicited comments on its efforts to provide a more substantial empirical base for such decisions. Even the U.S. Copyright Office has solicited empirical evidence which would be useful in estimating the extent of economic injury which would accompany the provision of performance rights, in addition to existing mechanical reproduction rights already enjoyed by copyright holders (24).

It is neither competition or copyright requirements which may be seen to occasion economic injury to commercial broadcasters, but regulatory efforts to protect the public from the effects of cultural pollution.

We have already made progress toward estimating the technical efficiency of violence-related program attributes, we can estimate their economic efficiency only with the addition of cost and revenue data. Regression analysis will allow us to estimate the relation between violence and program cost, and violence and advertising revenue just as we have estimated the relation between violence and audience shares. Estimates of marginal cost and marginal revenue would allow both broadcaster and regulator (public or private) to assess the impact of any restrictive policies which would modify the audience production function.

Attempts to go beyond this effort should include the specification of

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* Ibid citing United States et al. v. Southwestern Cable Co. et al. 392 U.S. 157 June 10, 1968 wherein the Supreme Court supported the FCC in providing protection to major market broadcasters from CATV imported signals.

additional variables, or program attributes which we believe to be important factors in audience production. Such research might determine, for example, the extent to which humor or sex can be substituted for violence. Indeed, the production function approach may be useful in determining the marginal product of virtually any program attribute capable of being unambiguously measured.

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TABLE ONE GROUP MEANS FOR NETWORKS AND PROGRAM TYPES--Non-Family Hour (9 PM and Later)

| Variables | ALL | ABC | CBS | NBC | Film | Crime | Teleplay | Total Sample |
|---|---|---|---|---|---|---|---|---|
| N of Cases | 390 | 116 | 143 | 131 | 110 | 188 | 280 | 586 |
| Half Hour Rating | 19.34 | 21.14 | 18.58 | 18.57 | 20.04 | 19.09 | 19.07 | 19.79 |
| Share | 31.10 | 34.40 | 29.74 | 29.65 | 32.31 | 30.73 | 30.62 | 31.21 |
| (Major Characters)* | | | | | | | | |
| Number | .049 | .047 | .055 | .044 | .029 | .046 | .057 | .052 |
| Number of Violents | .028 | .028 | .029 | .027 | .017 | .035 | .032 | .026 |
| Number of Victims | .029 | .028 | .029 | .029 | .018 | .035 | .033 | .028 |
| Number Involved in Violence | .034 | .033 | .036 | .033 | .021 | .041 | .040 | .034 |
| Number of Killers | .004 | .003 | .005 | .004 | .004 | .007 | .004 | .003 |
| Number Killed | .003 | .002 | .003 | .003 | .004 | .003 | .002 | .002 |
| Number Involved in Killing | .006 | .004 | .007 | .007 | .007 | .008 | .006 | .005 |
| Number of Comic Acts | .004 | .005 | .004 | .003 | .002 | .001 | .005 | .009 |
| Number of Serious Acts | .095 | .089 | .087 | .110 | .089 | .131 | .098 | .082 |
| (Characters in Violent Actions)* | | | | | | | | |
| Number of Participants | .027 | .024 | .023 | .034 | .030 | .039 | .026 | .024 |
| Number Injured | .581 | .544 | .574 | .621 | .311 | .632 | .687 | .596 |
| Number Dead | .022 | .030 | .015 | .022 | .039 | .020 | .015 | .018 |



* Per minute measure

**TABLE TWO** INDUSTRY PRODUCTION FUNCTIONS (All Programs, N=586 half hours)

| Standardized Variables | Half Hour Audience (BETA) | Share of Audience (BETA) |
|---|---|---|
| (Major Characters) | | |
| Number | .035 | ... |
| Number of Violents | -.016 | .047 |
| Number of Victims | .208** | .239** |
| Number Involved in Violence | -.200** | -.235** |
| Number of Killers | -.103 | -.138 |
| Number Killed | -.111 | -.126 |
| Number Involved in Killing | .044 | .089 |
| Number of Comic Acts | -.016 | -.030 |
| Number of Serious Acts | -.049 | -.123** |
| (Characters in Violent Actions) | | |
| Number of Participants | -.008 | .030 |
| Number Injured | .067* | .050 |
| Number Dead | .146** | .169** |
| R-Squared | .043 | .052 |
| F | 2.18* | 2.85** |

*=.05
**=.01

TABLE THREE INDUSTRY PRODUCTION FUNCTIONS (Non-Family Hours, N=390)

| Input Factors | Share of Audience | | Half Hour Audience | |
|---|---|---|---|---|
| (Major characters) | Beta | F | Beta | F |
| Number | .065 | 1.024 | .078 | 1.440 |
| Number of Violents | .244 | 3.825** | .104 | .680 |
| Number of Victims | .339 | 8.982** | .264 | 5.373** |
| Number Involved in Violence | -.460 | 7.446** | -.341 | 4.022** |
| Number of Killers | -.323 | 3.417** | -.171 | .946 |
| Number Killed | -.186 | 2.740** | -.150 | 1.751 |
| Number Involved in Killing | .297 | 1.528 | .133 | .301 |
| Number of Comic Acts | -.038 | .447 | -.007 | .017 |
| Number of Serious Acts | -.075 | .822 | .023 | .083 |
| (Characters in Violent Actions) | | | | |
| Number of Participants | -.037 | .220 | -.090 | 1.269 |
| Number Injured | .021 | .139 | .035 | .377 |
| Number Dead | .154 | 5.248** | .195 | 8.234** |
| R-Squared | .090 | | .076 | |
| F | 3.138** | | 2.600** | |

*=.05
**=.01

TABLE FOUR NETWORK PRODUCTION FUNCTIONS (Non-Family Hours)

Half Hour Audience

| Input Factors (Standardized Variables) | (N=116) ABC(Beta) | (N=143) CBS(Beta) | (N=131) NBC(Beta) |
|---|---|---|---|
| (Major Characters) | | | |
| Number | -.057 | .396** | -.154 |
| Number of Violents | -.030 | -.024 | .221 |
| Number of Victims | .188 | .127 | .428** |
| Number Involved in Violence | -.175 | -.287 | -.600** |
| Number of Killers | .199 | .133 | -.972** |
| Number Killed | .621** | -.493** | -.414* |
| Number Involved in Killing | -.691** | .288 | 1.002** |
| Number of Comic Acts | -.046 | .230** | -.113 |
| Number of Serious Acts | .171 | .181 | -.120 |
| (Characters in Violent Actions) | | | |
| Number of Participants | .090 | -.105 | -.077 |
| Number Injured | .047 | .115 | -.176** |
| Number Dead | .239 | -.188** | .315** |
| R-Squared | .266 | .307 | .242 |
| F | 3.117** | 4.816** | 3.144** |

*=.05
**=.01

TABLE FIVE FORM/GENRE PRODUCTION FUNCTIONS (Non Family Hours)

Audience Share (Betas)

| (Major Characters) | N=110 Feature Film | N=280 Teleplay | N=188 Crime |
|---|---|---|---|
| Number | .386** | .163** | -.277** |
| Number of Violents | 1.010** | .311** | -.077 |
| Number of Victims | .461 | .360** | .350** |
| Number Involved in Violence | -1.594** | -.460** | -.356 |
| Number of Killers | .074 | -.090 | .302 |
| Number Killed | -1.396** | -.016 | -.102 |
| Number Involved in Killing | .079 | ---- | -.356 |
| Number of Comic Acts | -.324** | -.113** | -.116** |
| Number of Serious Acts | -.654** | -.025 | .154** |
| (Characters in Violent Actions) | | | |
| Number of Participants | 1.058** | ---- | -.067 |
| Number Injured | .078 | .043 | .082 |
| Number Dead | 1.192** | -.230** | -.166** |
| R-Squared | .551 | .105 | .185 |
| F | 9.923** | 3.157** | 3.311** |

*=.05
**=.01

TABLE SIX SIMPLIFIED NETWORK MODELS UNDER FULLY COMPETITIVE CONDITIONS (N=106 half hour periods)

Audience Shares (Betas)

| Variables | ABC | CBS | NBC |
|---|---|---|---|
| ABC Seriousness | .258** | .182 | -.362** |
| CBS Seriousness | .127 | .173 | -.188 |
| NBC Seriousness | -.044 | -.191** | .192** |
| ABC Significance | -.080 | -.281** | .370** |
| CBS Significance | .483** | -.451** | -.026 |
| NBC Significance | .098 | -.114 | -.026 |
| ABC Rate+ | .111 | -.083 | .057 |
| CBS Rate+ | -.263** | .132 | .131 |
| NBC Rate+ | .273** | .053 | -.149 |
| R-Squared | .316 | .164 | .127 |
| F | 4.947** | 2.093* | 1.557(ns) |

*=.05
**=.01

+ Acts of violence per minute

TABLE SEVEN STANDARDIZED VARIABLES MODELS UNDER FULLY COMPETITIVE CONDITIONS (N=106 Half Hour Periods)

Audience Shares (Betas)

| Variables | ABC | CBS | NBC |
|---|---|---|---|
| ABC Difference | .086 | -.141 | .270* |
| CBS Difference | ---- | .030 | ---- |
| NBC Difference | .250** | ---- | -.042 |
| ABC Victims | .062 | -.241 | .391** |
| CBS Victims | -.286** | .219 | .358 |
| NBC Victims | -.065 | ---- | -.046 |
| ABC Dead | .187** | -.236** | -.067 |
| CBS Dead | .251** | -.156** | .015 |
| NBC Dead | .117 | .273** | -.233** |
| ABC Injured | .078 | .107 | -.178 |
| CBS Injured | -.228** | .472** | -.148 |
| NBC Injured | -.016 | -.186** | .190** |
| ABC Violents | ---- | -.091 | -.062 |
| CBS Violents | .256* | -.193 | .145 |
| NBC Violents | .456** | -.469** | .586** |
| ABC Involved | -.215 | .367 | -.202 |
| CBS Involved | ---- | -.199 | -.202 |
| NBC Involved | -.490** | .393** | -.453** |
| R-Squared | .245 | .327 | .147 |
| F | 1.947* | 2.703** | .894(ns) |

*=.05
**=.01